

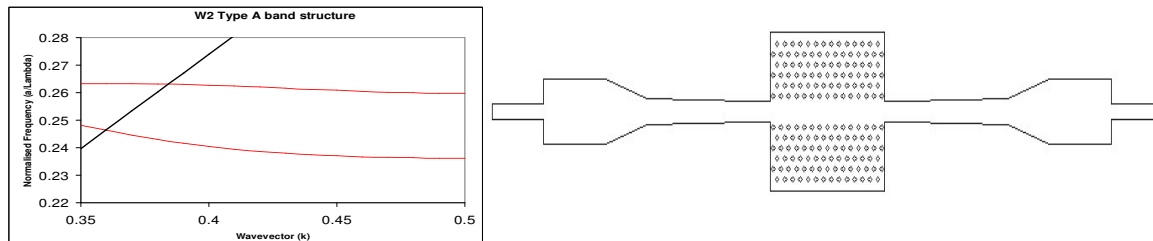
Slow light photonic crystal waveguides

M.D.Settle, M. Ayre, T. J. Karle, T.F.Krauss

School of Physics and Astronomy, University of St Andrews, Fife, UK

Slow light offers many opportunities for photonic devices by increasing the effective interaction length of imposed refractive index changes. The slow wave effect in photonic crystals is based on their unique dispersive properties and thus entirely dielectric in nature.

In Silicon-On-Insulator material, low loss operation requires that one should operate below the silica light line and thus restricts the useable region of the band structure. By injecting into higher order modes we can use a flat non-dispersive band whilst staying below the light line. The injection in to the higher-order modes can be achieved using a multi-mode interference device as shown below.



Left: Calculated band structures for W2 waveguides. Right: Schematic of projected device including injector into slow mode.